

In the Claims:

Claims 7, 11, 12, 14, 17, 18, 19, 51, 54, 55, 59, 63 and 67 are amended herein. Claims 1 and 6 are canceled. Non-elected claims 2-5 and 20-50 were previously canceled. New claims 68-70 are added

1. (canceled)

2-5. (canceled)

6. (canceled)

7. (currently amended) The super hard and tough nano-crystal austenite steel bulk material with an improved corrosion resistance according to claim ~~1 or 6~~ 14 or 68, wherein said austenite steel bulk material comprising an aggregate of austenite nano-crystal grains containing 0.1 to 2.0% (by mass) of nitrogen in solid solution contains in a structure thereof an amount of ferrite nano-crystal grains.

8-10. (canceled)

11. (currently amended) The super hard and tough nano-crystal austenite steel bulk material with an improved corrosion resistance according to any one of claims ~~1 or 6~~ 14 or 68, wherein said bulk material comprising an aggregate of austenite nano-crystal grains containing 0.1 to 2.0% (by mass) of nitrogen

in solid solution comprises a nitrogen-affinity metal element that has a stronger chemical affinity for nitrogen than iron, ~~such as~~ said nitrogen-affinity metal element selected from the group consisting of niobium, tantalum, manganese, and chromium, so as to prevent denitrification during a forming-by-sintering process thereof.

12. (currently amended) The super hard and tough nano-crystal austenite steel bulk material with an improved corrosion resistance according to claim ~~1 or 6~~ 14 or 68, wherein said bulk material comprising an aggregate of austenite nano-crystal grains containing 0.1 to 2.0% (by mass) of nitrogen in solid solution has a steel forming and blending composition comprising 12 to 30% (by mass) of Cr, 0 to 20% (by mass) of Ni, 0 to 30% (by mass) of Mn, 0.1 to 2.0% (by mass) of N and 0.02 to 1.0% (by mass) of C with the rest being substantially Fe.

13. (canceled)

14. (currently amended) ~~The super hard and tough nano-crystal austenite steel bulk material with an improved corrosion resistance according to claim 1 or 6,~~ A super hard and tough austenite steel bulk material with an improved corrosion resistance, comprising an aggregate of austenite nano-crystal grains containing 0.1 to 2.0% (by mass) of nitrogen in solid-solution wherein said austenite nano-crystal grains are obtained

by mechanical alloying (MA) using a ball mill or the like, and wherein some amount of a metal oxide or a semi-metal oxide is inevitably formed on the surface of MA powder products during MA processing, acting as a crystal grain growth inhibitor between or in said nano-crystal grains, or between and in said nano crystal grains,

wherein said bulk material comprising an aggregate of austenite nano-crystal grains containing 0.1 to 2.0% (by mass) of nitrogen in solid solution has a steel forming and blending composition comprising .4 to 40% (by mass) of Mn, 0.1 to 2.0% (by mass) of N, 0.1 to 2.0% (by mass) of C and 3 to 10% (by mass) of Cr with the rest being substantially Fe.

15-16. (canceled)

17. (currently amended) The super hard and tough nano-crystal austenite steel bulk material with an improved corrosion resistance according to claim ~~1-or 6~~ 14 or 68, which comprises an aggregate of austenite nano-crystal grains containing 0.3 to 1.0% (by mass) of a nitrogen in solid solution and having a crystal grain diameter of 50 to 1,000 nm.

18. (currently amended) The super hard and tough nano-crystal austenite steel bulk material with an improved corrosion resistance according to claim ~~1-or 6~~ 14 or 68, which comprises an aggregate of austenite nano-crystal grains containing 0.4 to 0.9%

(by mass) of a solid-solution type nitrogen and having a crystal grain diameter of 75 to 500 nm.

19. (currently amended) The super hard and tough nano-crystal austenite steel bulk material with an improved corrosion resistance according to claim ~~1-~~or~~-6~~ 14 or 68, which comprises an aggregate of austenite nano-crystal grains containing 0.4 to 0.9% (by mass) of a nitrogen in solid solution and having a crystal grain diameter of 100 to 300 nm.

20-50. (canceled)

51. (currently amended) The super hard and tough nano-crystal austenite steel bulk material with an improved corrosion resistance according to claim 7, wherein said bulk material comprising an aggregate of austenite nano-crystal grains containing 0.1 to 2.0% (by mass) of nitrogen in solid solution comprises a nitrogen-affinity metal element that has a stronger chemical affinity for nitrogen than iron, ~~such as~~ said nitrogen-affinity metal element selected from the group consisting of niobium, tantalum, manganese, and chromium, so as to prevent denitrification during a forming-by-sintering process thereof.

52. (previously presented) The super hard and tough nano-crystal austenite steel bulk material with an improved corrosion resistance according to claim 7, wherein said bulk material comprising an aggregate of austenite nano-crystal grains

containing 0.1 to 2.0% (by mass) of nitrogen in solid solution has a steel forming and blending composition comprising 12 to 30% (by mass) of Cr, 0 to 20% (by mass) of Ni, 0 to 30% (by mass) of Mn, 0.1 to 2.0% (by mass) of N and 0.02 to 1.0% (by mass) of C with the rest being substantially Fe.

53. (previously presented) The super hard and tough nano-crystal austenite steel bulk material with an improved corrosion resistance according to claim 11, wherein said bulk material comprising an aggregate of austenite nano-crystal grains containing 0.1 to 2.0% (by mass) of nitrogen in solid solution has a steel forming and blending composition comprising 12 to 30% (by mass) of Cr, 0 to 20% (by mass) of Ni, 0 to 30% (by mass) of Mn, 0.1 to 2.0% (by mass) of N and 0.02 to 1.0% (by mass) of C with the rest being substantially Fe.

54. (currently amended) ~~The super hard and tough nano-crystal austenite steel bulk material with an improved corrosion resistance according to claim 7,~~ A super hard and tough austenite steel bulk material with an improved corrosion resistance, comprising an aggregate of austenite nano-crystal grains containing 0.1 to 2.0% (by mass) of nitrogen in solid solution wherein said austenite nano-crystal grains are obtained by mechanical alloying (MA) using a ball mill or the like, and wherein some amount of a metal oxide or a semi-metal oxide is inevitably formed on the surface of MA powder products during MA

processing, acting as a crystal grain growth inhibitor between or in said nano-crystal grains, or between and in said nano crystal grains,

wherein said austenite steel bulk material comprising an aggregate of austenite nano-crystal grains containing 0.1 to 2.0% (by mass) of nitrogen in solid solution contains in a structure thereof an amount of ferrite nano-crystal grains, and

wherein said bulk material comprising an aggregate of austenite nano-crystal grains containing 0.1 to 2.0% (by mass) of nitrogen in solid solution has a steel forming and blending composition comprising 4 to 40% (by mass) of Mn, 0.1 to 2.0% (by mass) of N, 0.1 to 2.0% (by mass) of C and 3 to 10% (by mass) of Cr with the rest being substantially Fe.

55. (currently amended) ~~The super hard and tough nano-crystal austenite steel bulk material with an improved corrosion resistance according to claim 11,~~ A super hard and tough austenite steel bulk material with an improved corrosion resistance, comprising an aggregate of austenite nano-crystal grains containing 0.1 to 2.0% (by mass) of nitrogen in solid-solution wherein said austenite nano-crystal grains are obtained by mechanical alloying (MA) using a ball mill or the like, and wherein some amount of a metal oxide or a semi-metal oxide is inevitably formed on the surface of MA powder products during MA processing, acting as a crystal grain growth inhibitor between or

in said nano-crystal grains, or between and in said nano crystal grains,

wherein said bulk material comprising an aggregate of austenite nano-crystal grains containing 0.1 to 2.0% (by mass) of nitrogen in solid solution comprises a nitrogen-affinity metal element that has a stronger chemical affinity for nitrogen than iron, said nitrogen-affinity metal element selected from the group consisting of niobium, tantalum, manganese, and chromium, so as to prevent denitrification during a forming-by-sintering process thereof, and

wherein said bulk material comprising an aggregate of austenite nano-crystal grains containing 0.1 to 2.0% (by mass) of nitrogen in solid solution has a steel forming and blending composition comprising .4 to 40% (by mass) of Mn, 0.1 to 2.0% (by mass) of N, 0.1 to 2.0% (by mass) of C and 3 to 10% (by mass) of Cr with the rest being substantially Fe.

56. (previously presented) The super hard and tough nano-crystal austenite steel bulk material with an improved corrosion resistance according to claim 7, which comprises an aggregate of austenite nano-crystal grains containing 0.3 to 1.0% (by mass) of a nitrogen in solid solution and having a crystal grain diameter of 50 to 1,000 nm.

57. (previously presented) The super hard and tough nano-crystal austenite steel bulk material with an improved corrosion

resistance according to claim 11, which comprises an aggregate of austenite nano-crystal grains containing 0.3 to 1.0% (by mass) of a nitrogen in solid solution and having a crystal grain diameter of 50 to 1,000 nm.

58. (previously presented) The super hard and tough nano-crystal austenite steel bulk material with an improved corrosion resistance according to claim 12, which comprises an aggregate of austenite nano-crystal grains containing 0.3 to 1.0% (by mass) of a nitrogen in solid solution and having a crystal grain diameter of 50 to 1,000 nm.

59. (currently amended) The super hard and tough nano-crystal austenite steel bulk material with an improved corrosion resistance according to claim 14 or 68, which comprises an aggregate of austenite nano-crystal grains containing 0.3 to 1.0% (by mass) of a nitrogen in solid solution and having a crystal grain diameter of 50 to 1,000 nm.

60. (previously presented) The super hard and tough nano-crystal austenite steel bulk material with an improved corrosion resistance according to claim 7, which comprises an aggregate of austenite nano-crystal grains containing 0.4 to 0.9% (by mass) of a solid-solution type nitrogen and having a crystal grain diameter of 75 to 500 nm.



61. (previously presented) The super hard and tough nano-crystal austenite steel bulk material with an improved corrosion resistance according to claim 11, which comprises an aggregate of austenite nano-crystal grains containing 0.4 to 0.9% (by mass) of a solid-solution type nitrogen and having a crystal grain diameter of 75 to 500 nm.

62. (previously presented) The super hard and tough nano-crystal austenite steel bulk material with an improved corrosion resistance according to claim 12, which comprises an aggregate of austenite nano-crystal grains containing 0.4 to 0.9% (by mass) of a solid-solution type nitrogen and having a crystal grain diameter of 75 to 500 nm.

63. (currently amended) The super hard and tough nano-crystal austenite steel bulk material with an improved corrosion resistance according to claim 14 or 68, which comprises an aggregate of austenite nano-crystal grains containing 0.4 to 0.9% (by mass) of a solid-solution type nitrogen and having a crystal grain diameter of 75 to 500 nm.

64. (previously presented) The super hard and tough nano-crystal austenite steel bulk material with an improved corrosion resistance according to claim 7, which comprises an aggregate of austenite nano-crystal grains containing 0.4 to 0.9% (by mass) of

a nitrogen in solid solution and having a crystal grain diameter of 100 to 300 nm.

65. (previously presented) The super hard and tough nano-crystal austenite steel bulk material with an improved corrosion resistance according to claim 11, which comprises an aggregate of austenite nano-crystal grains containing 0.4 to 0.9% (by mass) of a nitrogen in solid solution and having a crystal grain diameter of 100 to 300 nm.

66. (previously presented) The super hard and tough nano-crystal austenite steel bulk material with an improved corrosion resistance according to claim 12, which comprises an aggregate of austenite nano-crystal grains containing 0.4 to 0.9% (by mass) of a nitrogen in solid solution and having a crystal grain diameter of 100 to 300 nm.

67. (currently amended) The super hard and tough nano-crystal austenite steel bulk material with an improved corrosion resistance according to claim 14 or 68, which comprises an aggregate of austenite nano-crystal grains containing 0.4 to 0.9% (by mass) of a nitrogen in solid solution and having a crystal grain diameter of 100 to 300 nm.

68. (new) A super hard and tough austenite steel bulk material with an improved corrosion resistance, comprising an aggregate of austenite nano-crystal grains containing of 0.1 to

2.0% (by mass) of nitrogen in solid solution, wherein said austenite nano-crystal grains are obtained by mechanical alloying (MA) using a ball mill or the like, and wherein an amount of a metal oxide or a semi-metal oxide is inevitably formed on the surface of MA powder products during MA processing, acting as a crystal grain growth inhibitor between or in said nano-crystal grains, or between and in said nano crystal grains, and wherein at least one or two selected from the group consisting of (1) a metal oxide or a semimetal oxide, (2) a metal silicide or a semimetal silicide and (3) a metal boride or a semimetal boride exist as a crystal grain growth inhibitor between and/or in said nano-crystal grains,

wherein said bulk material comprising an aggregate of austenite nano-crystal grains containing 0.1 to 2.0% (by mass) of nitrogen in solid solution has a steel forming and blending composition comprising 4 to 40% (by mass) of Mn, 0.1 to 2.0% (by mass) of N, 0.1 to 2.0% (by mass) of C and 3 to 10% (by mass) of Cr with the rest being substantially Fe.

69. (new) A super hard and tough austenite steel bulk material with an improved corrosion resistance, comprising an aggregate of austenite nano-crystal grains containing 0.1 to 2.0% (by mass) of nitrogen in solid solution, wherein said austenite nano-crystal grains are obtained by mechanical alloying (MA) using a ball mill or the like, and wherein an amount of a

metal oxide or a semi-metal oxide is inevitably formed on the surface of MA powder products during MA processing, acting as a crystal grain growth inhibitor between or in said nano-crystal grains, or between and in said nano crystal grains, and wherein at least one or two selected from the group consisting of (1) a metal oxide or a semimetal oxide, (2) a metal silicide or a semimetal silicide and (3) a metal boride or a semimetal boride exist as a crystal grain growth inhibitor between and/or in said nano-crystal grains,

wherein said austenite steel bulk material comprising an aggregate of austenite nano-crystal grains containing 0.1 to 2.0% (by mass) of nitrogen in solid solution contains in a structure thereof an amount of ferrite nano-crystal grains, and

wherein said bulk material comprising an aggregate of austenite nano-crystal grains containing 0.1 to 2.0% (by mass) of nitrogen in solid solution has a steel forming and blending composition comprising 4 to 40% (by mass) of Mn, 0.1 to 2.0% (by mass) of N, 0.1 to 2.0% (by mass) of C and 3 to 10% (by mass) of Cr with the rest being substantially Fe.

70. (new) A super hard and tough austenite steel bulk material with an improved corrosion resistance, comprising an aggregate of austenite nano-crystal grains containing of 0.1 to 2.0% (by mass) of nitrogen in solid solution, wherein said austenite nano-crystal grains are obtained by mechanical alloying

(MA) using a ball mill or the like, and wherein an amount of a metal oxide or a semi-metal oxide is inevitably formed on the surface of MA powder products during MA processing, acting as a crystal grain growth inhibitor between or in said nano-crystal grains, or between and in said nano crystal grains, and wherein at least one or two selected from the group consisting of (1) a metal oxide or a semimetal oxide, (2) a metal silicide or a semimetal silicide and (3) a metal boride or a semimetal boride exist as a crystal grain growth inhibitor between and/or in said nano-crystal grains, wherein said bulk material comprising an aggregate of austenite nano-crystal grains containing 0.1 to 2.0% (by mass) of nitrogen in solid solution comprises a nitrogen-affinity metal element that has a stronger chemical affinity for nitrogen than iron, said nitrogen-affinity metal element selected from the group consisting of niobium, . tantalum, manganese, and chromium, so as to prevent denitrification during a forming-by-sintering process thereof, and

wherein said bulk material comprising an aggregate of austenite nano-crystal grains containing 0.1 to 2.0% (by mass) of nitrogen in solid solution has a steel forming and blending composition comprising .4 to 40% (by mass) of Mn, 0.1 to 2.0% (by mass) of N, 0.1 to 2.0% (by mass) of C and 3 to 10% (by mass) of Cr with the rest being substantially Fe.